

[illegible]

the exemption applies. Experiments conducted by this commenter indicates that a low cost solution exists which will be discussed in following paragraphs.

<p>For a Hearing Aid made immune to demodulation and amplification of the FRO it is possible to lessen the magnetic field generated by the cellular telephone's battery and leads from the battery to the telephones electronics that is responsible for the interference when the hearing aid's TO coil is being used.

<p>Little information can be found on methods to lessen magnetic fields. There is much information that indicates that varying magnetic fields will induce currents in adjacent conductors and it is this phenomena that allows coupling the desired telephone's audio signal to the hearing aid's T coil.

<p>To demonstrate a method of lessening the magnetic field from leads carrying

varying current, if a magnetometer is held near a lamp cord in which AC current is flowing, a small magnetic field will be indicated. If however the cord has its two conductors separated a fraction of an inch, the magnetic field will be greatly increased at this point. This effect is due to the fact that in closely spaced conductors where the current is flowing in equal amounts but in opposite direction, the magnetic fields are lessened but with separation this lessening effect is

not as great.

<p>Since the digital cellular telephone's battery is made up of a number of separate cells no self canceling of the magnetic fields occurs and as a result a magnetometer held near a digital cellular telephone's battery indicates that a strong magnetic field is generated.

<p>To demonstrate that this magnetic field can be greatly lessened or even eliminated a pulsing current generator was designed that simulates the pulsing current in the telephone. Four AA cells were connected in series in a 2x2 configuration in the manner of the cells in the telephone battery and connected to the simulator. The field measured in the vicinity of this battery was very strong, 200 Ma/meter or more. The amount of field strength required for proper operation of an audio loop is only 50-100 Ma/meter. This indicates that the telephone's battery is a source of the interference. When the same simulator was connected to a telephone's battery a similar reading was obtained.

<p>Next, the four AA cells in series were placed in copper tubing and so connected that the current flowing in the battery and in the copper tubing were in opposite directions and little magnetic field could be measured so encasing the cells making up the telephone battery in some type of conducting foil connected so that the current flowing in the foil is in the opposite direction as that in the cells will greatly decrease this source of interference.

<p>To demonstrate the effect of widely separated current leads the battery was connected to the simulator by a pair of leads separated only by the thickness of the insulation and the measured field was in the order of 10-25Ma/meter. When the leads were separated by an inch the magnetic field increased to over 100 Ma/meter.

<p>To test the effectiveness of shielded wire with a shield that completely surrounded the inner conductor, (RG-174U coaxial cable) was used to connect the battery to the simulator, and even though the wire was configured into a multi turn coil to increase the magnetic field little magnetic field was measured.

<p>Section III.D, paragraph 31. Since it is possible to make all digital cellular telephones HAC phone a "product line" for hearing impaired individuals is neither required nor desirable This also makes "pairing" of hearing aids and

